acm computing surveys

Volumes 18–22 • 1986–1990

The Survey and Tutorial Journal of the ACM

CONTENTS

Vols. 18–22

Author Index

Corrigenda. Vol. 22, No. 4 (Dec. 1990), 409.
Corrigendum. Vol. 19, No. 2 (June 1987), 195.

Five-Year Author Index (1985–1989). Vol. 21, No. 4 (Dec. 1989), 624–626.
Five-Year Subject Index (1985–1989). Vol. 21, No. 4 (Dec. 1989), 626–628.

Abbott, R. J. Resourceful Systems for Fault Tolerance, Reliability, and Safety. Vol. 22 (March 1990), 35–68.
Abramson, B. Control Strategies for Two-Player Games. Vol. 21, No. 2 (June 1989), 137–161.
Adam, N. R., and **Wortmann, J. C.** Security-Control Methods for Statistical Databases: A Comparative Study. Vol. 21, No. 4 (Dec. 1989), 515–556.
Atkinson, M. P., and **Buneman, O. P.** Types and Persistence in Database Programming Languages. Vol. 19, No. 2 (June 1987), 105–190.
Bal, H. E., Steiner, J. G., and **Tanenbaum, A. S.** Programming Languages for Distributed Computing Systems. Vol. 21, No. 3 (Sept. 1989), 261–322.
Barkmeyer, E. See Thomas, G. Vol. 22, No. 3 (Sept. 1990), 237–266.
Batini, C., Lenzerini, M., and **Navathe, S. B.** A Comparative Analysis of Methodologies for Database Schema Integration. Vol. 18, No. 4 (Dec. 1986), 323–364.
Bell, T., Witten, I. H., and **Cleary, J. G.** Modeling for Text Compression. Vol. 21, No. 4 (Dec. 1989), 557–599.
Buneman, O. P. See Atkinson, M. P. Vol. 19, No. 2 (June 1987), 105–190.
Carriero, N., and **Gelernter, D.** How to Write Parallel Programs: A Guide to the Perplexed. Vol. 21, No. 3 (Sept. 1989), 323–357.
Carter, F. See Thomas, G. Vol. 22, No. 3 (Sept. 1990), 237–266.
Chin, R. T., and **Dyer, C. R.** Model-Based Recognition in Robot Vision. Vol. 18, No. 1 (Mar. 1986), 67–108.
Chu, P. See Mannino, M. V. Vol. 20, No. 3 (Sept. 1988), 191–221.
Chung, C.-W. See Thomas, G. Vol. 22, No. 3 (Sept. 1990), 237–266.
Cleary, J. G. See Bell, T. Vol. 21, No. 4 (Dec. 1989), 557–591.
Colburn, C. J., and **Van Oorschot, P. C.** Applications of Combinatorial Designs in Computer Science. Vol. 21, No. 2 (June 1989), 223–250.
Danforth, S. and **Tomlinson, C.** Type Theories and Object-Oriented Programming. Vol. 20, No. 1 (Mar. 1988), 29–72.
Desharnais, J. See Mili, A. Vol. 18, No. 3 (Sept. 1986), 231–276.
Du, H. C. See Enbody, R. J. Vol. 20, No. 2 (June 1988), 85–113.
Dyer, C. R. See Chin, R. T. Vol. 18, No. 1 (Mar. 1986), 67–108.
Ellman, T. Explanation Based Learning: A Survey of Programs and Perspectives. Vol. 21, No. 2 (June 1989) 163–221.
Elmagarmid, A. K. and **Pu, C.** Introduction to the Special Issue on Heterogeneous Databases. Vol. 22, No. 3 (Sept. 1990), 175–178.
Enbody, R. J., and **Du, H. C.** Dynamic Hashing Schemes. Vol. 20, No. 2 (June 1988), 85–113.
Fox, S. See Thomas, G. Vol. 22, No. 3 (Sept. 1990), 237–266.
Fry, J. P. See Teorey, T. J. Vol. 18, No. 2 (June 1986), 197–222.
Gagne, J. R. See Mili, A. Vol. 18, No. 3 (Sept. 1986), 231–276.
Galil, Z. Efficient Algorithms for Finding Maximum Matching in Graphs. Vol. 18, No. 1 (Mar. 1986), 23–38.
Gelernter, D. See Carriero, N. Vol. 21, No. 3 (Sept. 1989), 323–357.
Hartman, B. See Thomas, G. Vol. 22, No. 3 (Sept. 1990), 237–266.
Hartson, H. R., and **Hix, D.** Human–Computer Interface Development: Concepts and Systems. Vol. 21, No. 1 (Mar. 1989), 5–92.
Helmbold, D. P. See McDowell, D. E. Vol. 21, No. 4 (Dec. 1989), 593–622.
Hirschberg, D. S. See Lelewer, D. A. Vol. 19, No. 3 (Sept. 1987), 261–296.

Hirschheim, R. A. The Effect of A Priori Views on the Social Implications of Computing: The Case of Office Automation. Vol. 18, No. 2 (June 1986), 165–195.
Hix, D. See Hartson, H. R. Vol. 21, No. 1 (Mar. 1989), 5–92.
Hudak, P. Conception, Evolution, and Application of Functional Programming Languages. Vol. 21, No. 3 (Sept. 1989), 359–411.
Hull, R., and **King, R.** Semantic Database Modeling: Survey, Applications and Research Issues. Vol. 19, No. 3 (Sept. 1987), 201–260.
Johnson, A. M., Jr., and **Malek, M.** Survey of Software Tools for Evaluating Reliability, Availability and Serviceability. Vol. 20, No. 4 (Dec. 1988), 227–269.
Katz, R. H. Toward a Unified Framework for Version Modeling in Engineering Databases. Vol. 22, No. 4 (Dec. 1990), 375–408.
Kemper, A., and **Wallrath, M.** An Analysis of Geometric Modeling in Database Systems. Vol. 19, No. 1 (Mar. 1987), 47–91.
King, J. L. See Kraemer, K. L. Vol. 20, No. 2 (June 1988), 115–146.
King, R. See Hull, R. Vol. 19, No. 3 (Sept. 1987), 201–260.
Knapp, E. Deadlock Detection in Distributed Databases. Vol. 19, No. 4 (Dec. 1987), 303–328.
Knight, K. Unification: A Multidisciplinary Survey. Vol. 21, No. 1 (Mar. 1989), 93–124.
Kraemer, K. L., and **King, J. L.** Computer-Based Systems for Cooperative Work and Group Decision Making. Vol. 20, No. 2 (June 1988), 115–146.
Larson, J. A. See Sheth, A. P. Vol. 22, No. 3 (Sept. 1990), 184–236.
Lelewer, D. A., and **Hirschberg, D. S.** Data Compression. Vol. 19, No. 3 (Sept. 1987), 261–296.
Lenzerini, M. See Batini, C. Vol. 18, No. 4 (Dec. 1986), 323–364.
Leveson, N. G. Software Safety: What, Why, and How. Vol. 18, No. 2 (June 1986), 125–163.
Levy, E., and **Silberschatz, A.** Distributed File Systems: Concepts and Examples. Vol. 22, No. 4 (Dec. 1990), 321–374.
Litwin, W., Mark, L., and **Roussopoulos, N.** Interoperability of Multiple Autonomous Databases. Vol. 22, No. 3 (Sept. 1990), 267–293.
Lyytinen, K. Different Perspectives on Information Systems: Problems and Solutions. Vol. 19, No. 1 (Mar. 1987), 5–46.
Malek, M. See Johnson, A. M., Jr. Vol. 20, No. 4 (Dec. 1988), 227–269.
Mandl, R. Surveyors' Forum. Vol. 22, No. 2 (June 1990), 171.
Mannino, M. V., Chu, P., and **Sager, T.** Statistical Profile Estimation in Database Systems. Vol. 20, No. 3 (Sept. 1988), 191–221.
March, S. T. Editorial Policy. Vol. 19, No. 2 (June 1987), 97–104.
March, S. T. Editorial Policy. Vol. 20, No. 2 (June 1988), 77–84.
March, S. T. Editorial Policy. Vol. 21, No. 2 (June 1989), 129–136.
March, S. T. Editorial Policy. Vol. 22, No. 2 (June 1990), 73–81.
Mark, L. See Litwin, W. Vol. 22, No. 3 (Sept. 1990), 267–293.
Maryanski, F. See Peckham, J. Vol. 20, No. 3 (Sept. 1988), 153–189.
McDowell, C. E., and **Helmbold, D. P.** Debugging Concurrent Programs. Vol. 21, No. 4 (Dec. 1989), 593–622.
Mili, A., Desharnais, J., and **Gagne, J. R.** Formal Models of Stepwise Refinement of Programs. Vol. 18, No. 3 (Sept. 1986), 231–276.
Mills, C. B., and **Weldon, L. J.** Reading Text from Computer Screens. Vol. 19, No. 4 (Dec. 1987), 329–358.
Misra, J. Distributed Discrete-Event Simulation. Vol. 18, No. 1 (Mar. 1986), 39–65.
Navathe, S. B. See Batini, C. Vol. 18, No. 4 (Dec. 1986), 323–364.
Onvural, R. O. Survey of Closed Queueing Networks with Blocking. Vol. 22, No. 2 (June. 1990), 83–121.
Paull, M. C. See Ryder, B. G. Vol. 18, No. 3 (Sept. 1986), 277–316.
Pawlikowski, K. Steady-State Simulation of Queueing Processes: A Survey of Problems and Solutions. Vol. 22, No. 2 (June 1990), 124–170.
Peckham, J., and **Maryanski, F.** Semantic Data Models. Vol. 20, No. 3 (Sept. 1988), 153–189.
Perrott, R. H., and **Zarea-Aliabadi, A.** Supercomputer Languages. Vol. 18, No. 1 (Mar. 1986), 6–22.
Pu, C. See Elmagarmid, A. K. Vol. 22, No. 3 (Sept. 1990), 175–178.
Roussopoulos, N. See Litwin, W. Vol. 22, No. 3 (Sept. 1990), 267–293.
Ryder, B. G., and **Paull, M. C.** Elimination Algorithms for Data Flow Analysis. Vol. 18, No. 3 (Sept. 1986), 277–316.
Sager, T. See Mannino, M. V. Vol. 20, No. 3 (Sept. 1988), 191–221.
Samet, H. Hierarchical Representations of Collections of Small Rectangles. Vol. 20, No. 4 (Dec. 1988), 271–309.

Schneider, F. B. Implementing Fault-Tolerant Services Using the State Machine Approach: A Tutorial. Vol. 22, No. 4 (Dec. 1990), 299–319.
Segev, A. Surveyor's Forum. Transitive Dependencies. Vol. 19, No. 2 (June 1987), 191–192.
Shapiro, E. Corrigendum. Vol. 21, No. 4 (Dec. 1989), 629.
Shapiro, E. The Family of Concurrent Logic Programming Languages. Vol. 21, No. 3 (Sept. 1989), 413–510.
Sheth, A. P., and **Larson, J. A.** Federated Database Systems for Managing Distributed, Heterogeneous, and Autonomous Databases. Vol. 22, No. 3 (Sept. 1990), 184–236.
Silberschatz, A. See Levy, E. Vol. 22, No. 4 (Dec. 1990), 321–374.
Steiner, J. G. See Bal, H. E. Vol. 21, No. 3 (Sept. 1989), 261–322.
Takagi, H. Queuing Analysis of Polling Models. Vol. 20, No. 1 (Mar. 1988), 5–28.
Tanenbaum, A. S. See Bal, H. E. Vol. 21, No. 3 (Sept. 1989), 261–322.
Templeton, M. See Thomas, G. Vol. 22, No. 3 (Sept. 1990), 237–266.
Teorey, T. J. Surveyor's Forum. Vol. 19, No. 2 (June 1987), 193.
Teory, T. J., Yang, D., and **Fry, J. P.** A Logical Design Methodology for Relational Databases Using the Extended Entity-Relationship Model. Vol. 18, No. 2 (June 1986), 197–222.
Thomas, G., Thompson, G. R., Chung, C.-W., Barkmeyer, E., Carter, F., Templeton, M., Fox, S., and **Hartman, B.** Heterogeneous Distributed Database Systems for Production Use. Vol. 22, No. 3 (Sept. 1990), 237–266.
Thompson, G. R. See Thomas, G. Vol. 22, No. 3 (Sept. 1990), 237–266.
Tomlinson, C. See Danforth, S. Vol. 20, No. 1 (Mar. 1988), 29–72.
Van de Goor, A. J., and **Verruijt, C. A.** An Overview of Deterministic Functional RAM Chip Testing. Vol. 22, No. 1 (Mar. 1990), 5–33.
Van Oorshot, P. C. See Colbourn, C. J. Vol. 21, No. 2 (June 1989), 223–250.
Veen, A. H. Dataflow Machine Architecture. Vol. 18, No. 4 (Dec. 1986), 323–364.
Verruijt, C. A. See Van de Goor, A. J. Vol. 22, No. 1 (Mar. 1990), 5–33.
Wallrath, M. See Kemper, A. Vol. 19, No. 1 (Mar. 1987), 47–91.
Wasserman, A. I. Editorial Policy. Vol. 18, No. 2 (June 1986), 117.
Wegner, P. Introduction to the Special Issue on Programming Language Paradigms. Vol. 21, No. 3 (Sept. 1989), 253–258.
Weldon, L. J. See Mills, C. B. Vol. 19, No. 4 (Dec. 1987), 329–358.
Witten, I. H. See Bell, T. Vol. 21, No. 4 (Dec. 1989), 557–591.
Wortmann, J. C. See Adam, N. R. Vol. 21, No. 4 (Dec. 1989), 515–556.
Yang, D. See Teorey, T. J. Vol. 18, No. 2 (June 1986), 197–222.
Zarea-Aliabadi, A. See Perrott, R. H. Vol. 18, No. 1 (Mar. 1986), 6–22.

Subject Index 1986–1990

Artificial Intelligence

Chin and Dyer	March 1986
Abramson	June 1989
Eliman	June 1989

Computer Architecture; IC Design

Van de Goor and Verruijt	March 1990

Computing Methodologies

Knight	March 1989

Database Management

Teorey, Yang, and Fry	June 1986
Batini, Lenzerini, and Navathe	December 1986
Kemper and Wallrath	March 1987
Hull and King	September 1987
Peckham and Maryanski	September 1988

Mannino, Chu, and Sager	September 1988
Adam and Wortmann	December 1990
Sheth and Larson	September 1989
Thomas, Thompson, Chung, Barkmeyer, Carter, Templeton, Fox, and Hartman	September 1990
Litwin, Mark, and Roussopoulos	September 1990
Katz	December 1990
Data Management and Organization	
Lelewer and Hirschberg	September 1987
Enbody and Du	March 1988
Samet	December 1988
Bell, Witten, and Cleary	December 1989
Discrete Mathematics	
Galil	March 1986
Fault-Tolerant Software	
Abbott	March 1990
Information Systems Applications	
Hirschheim	June 1986
Kraemer and King	June 1986
Management of Computing	
Lyytinen	March 1987
Networks: Distributed Computing	
Knapp	December 1987
Schneider	December 1990
Operating Systems	
Levy and Silberschatz	December 1990
Performance Modeling	
Takagi	March 1988
Johnson and Malek	December 1988
Onvural	June 1990
Processor Architectures	
Veen	December 1986
Programming Languages	
Perrott and Zarea-Aliabadi	March 1986
Ryder and Paull	September 1986
Atkinson and Buneman	June 1987
Danforth	March 1988
Bal, Steiner, and Tanenbaum	September 1989
Carriero and Gelernter	September 1989
Hudak	September 1989
Shapiro	September 1989

Programming Methods, Validation, Testing

McDowell and Helmbold	December 1989

Simulation and Modeling

Misra	March 1986
Pawlikowski	June 1990

Software Engineering

Leveson	June 1986
Mili, Desharnais, and Gagne	September 1986

Theory of Computation

Colbourn and van Oorshot	June 1989

User Psychology

Mills and Weldon	December 1987
Hartson and Hix	March 1989